Penn Medicine

Upcoming Winter Viral Landscape and Update on Antibiotic Resistance in Lancaster County

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Disclosures

- I have no relevant financial relationship(s) with ineligible companies to disclose.

Learning Objectives

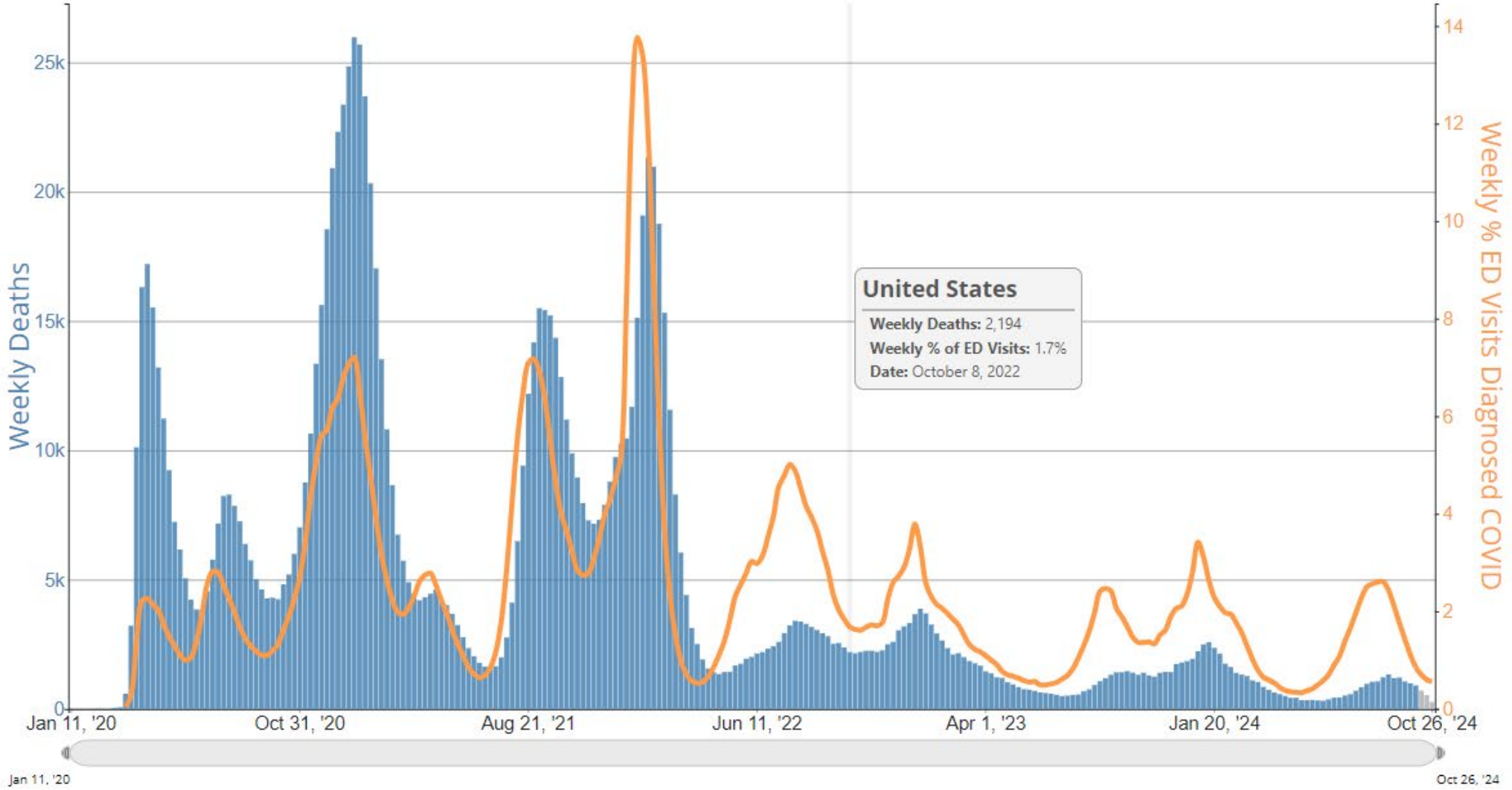
- Evaluate current viral and bacterial infections trends and discuss proper stewardship.
- Discuss treatment and prevention strategies for infections in the Lancaster County Area.

Is COVID still pandemic ?

- COVID is now evolved and converting to endemic infection
- Year-round presence of COVID-19 infections, with increased activity and transmission in certain months.
- COVID-19 is not a seasonal infection, such as influenza infections or respiratory syncytial virus (RSV) infections, which tend to peak during late fall, and end in early spring in North America

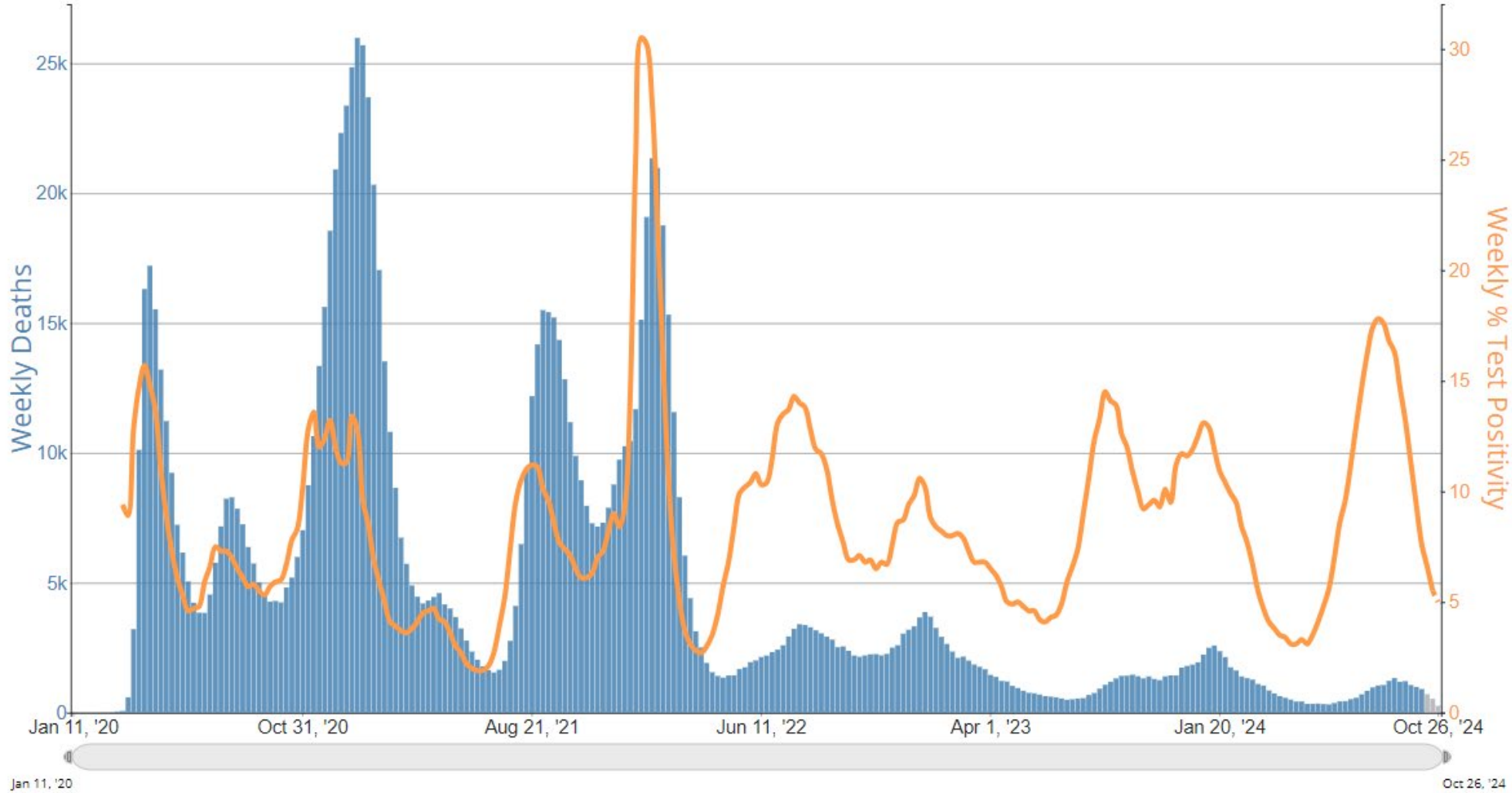
https://lancasteronline.com/opinion/columnists/the-state-of-covid-19-in-lancaster-county-column/article_fb55b980-5b73-11ef-961f-e7b1e57145a2.html

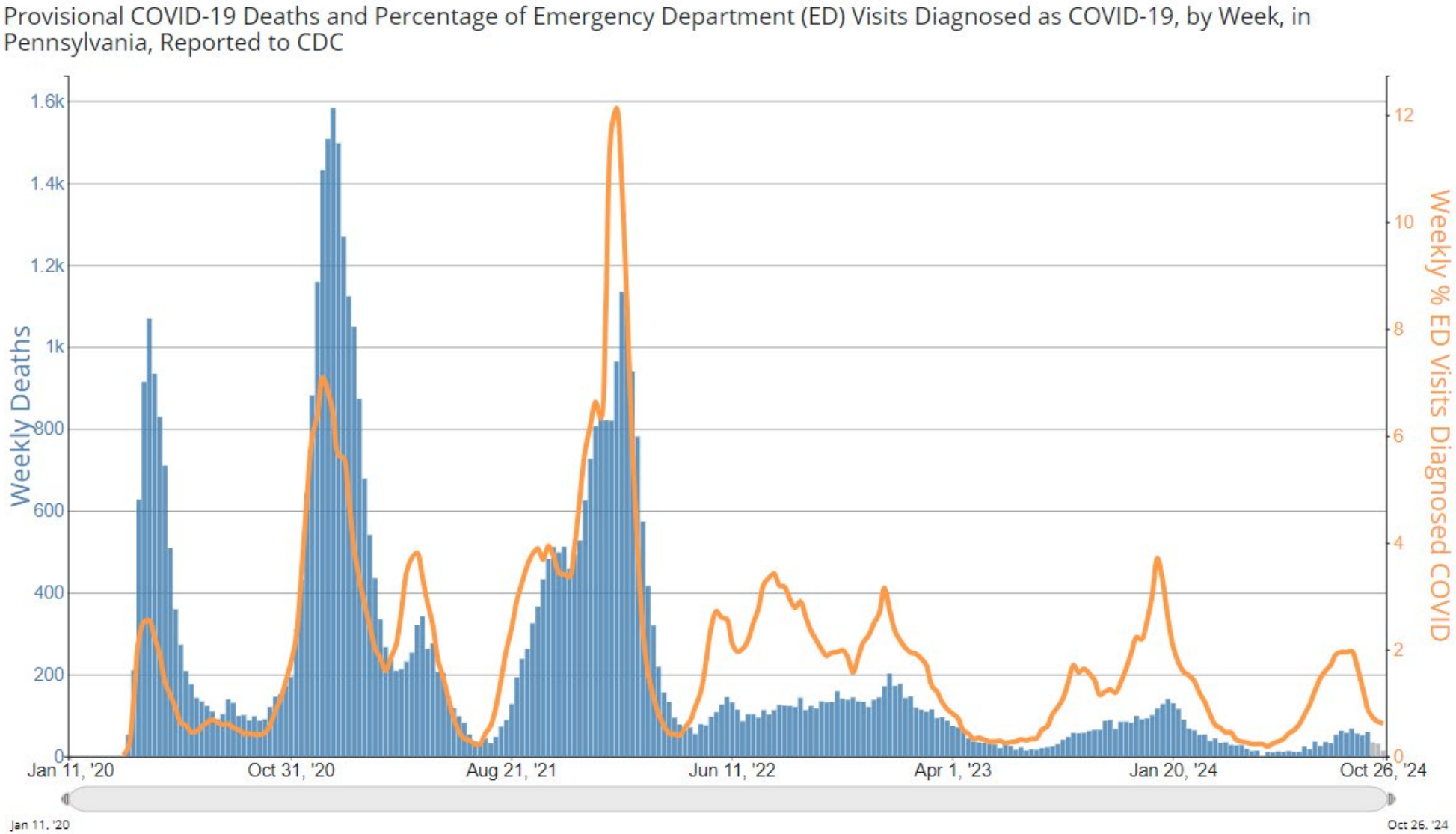
Provisional COVID-19 Deaths and Percentage of Emergency Department (ED) Visits Diagnosed as COVID-19, by Week, in The United States, Reported to CDC



https://covid.cdc.gov/covid-data-tracker/#trends_weeklydeaths_testpositivity_00

Provisional COVID-19 Deaths and COVID-19 Nucleic Acid Amplification Test (NAAT) Percent Positivity, by Week, in The United States, Reported to CDC

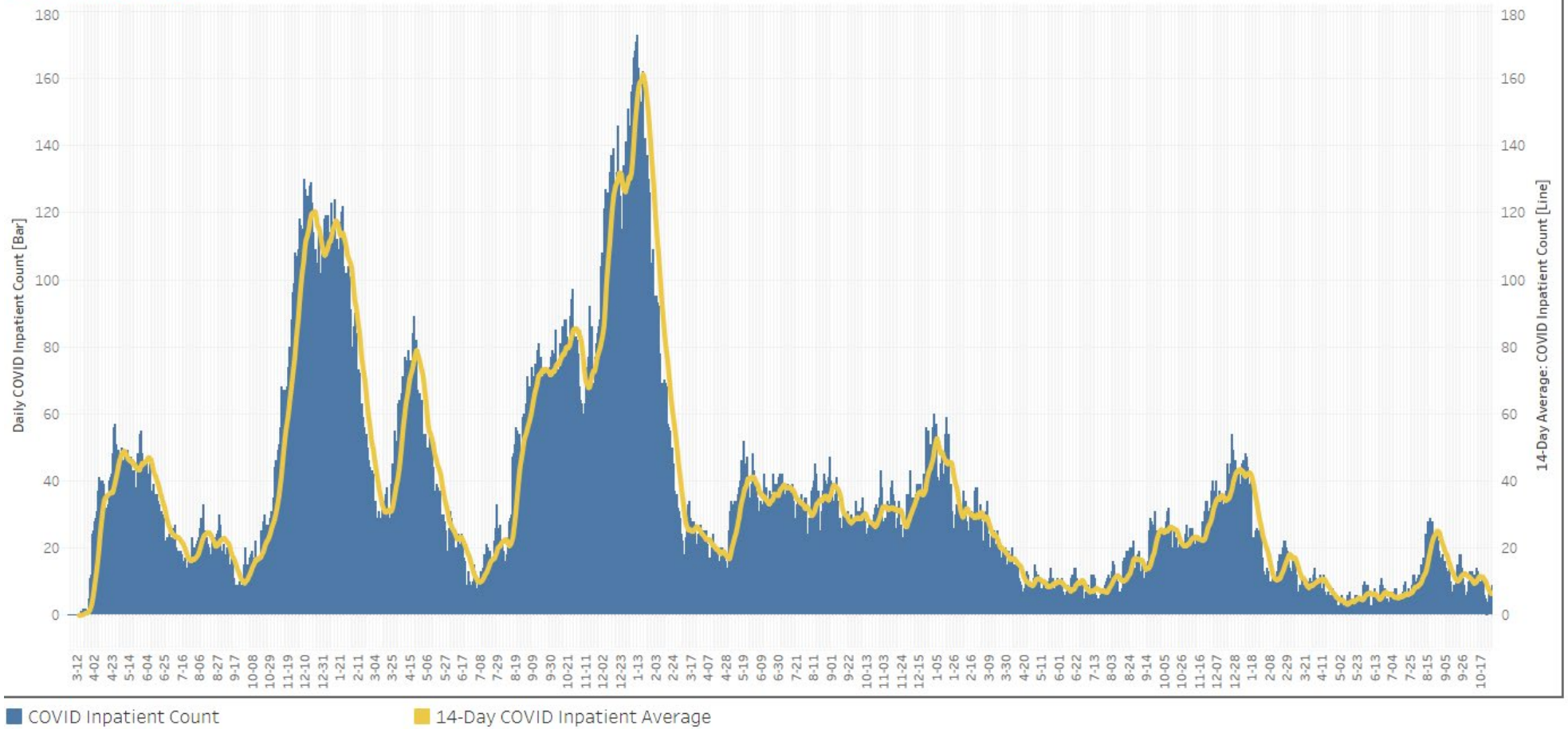




https://covid.cdc.gov/covid-data-tracker/#trends_weeklydeaths_7dayeddiagnosed_42

COVID Positive Inpatient Census

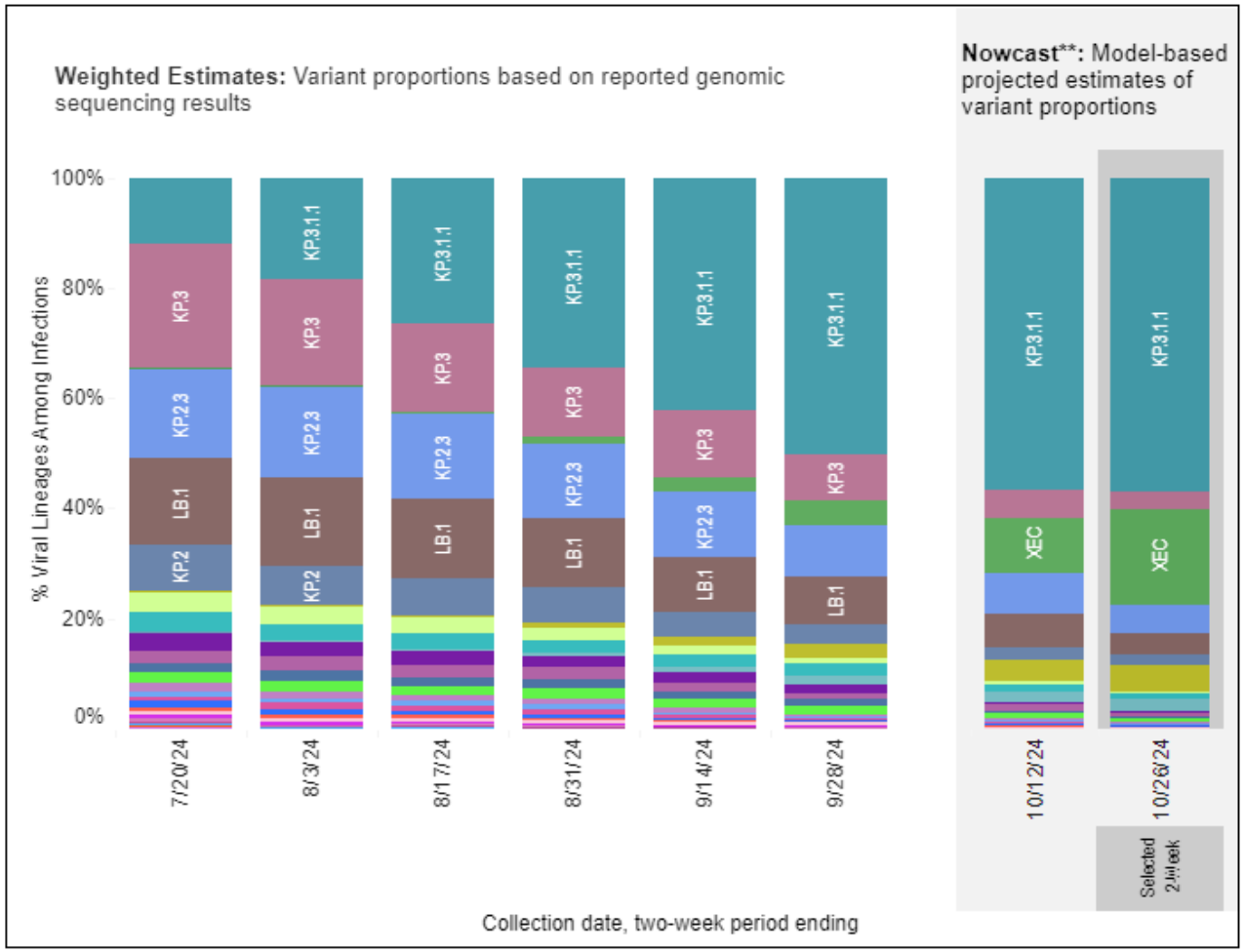
14-Day Moving Average



	10-15	10-16	10-17	10-18	10-19	10-20	10-21	10-22	10-23	10-24	10-25	10-26	10-27	10-28	10-29	10-30	10-31	11-01
COVID Inpatient Count	13	12	8	10	10	11	10	7	6	5	1	0	4	5	8	7	8	9
14-Day COVID Inpatient Average	11	12	12	12	11	11	11	11	10	10	9	9	8	7	7	7	7	7
14-Day COVID Inpatient Count	156	161	162	162	159	159	156	150	145	140	129	119	111	102	97	92	92	91

Weighted and Nowcast Estimates in United States for 2-Week Periods in 7/7/2024 – 10/26/2024

Hover over (or tap in mobile) any lineage of interest to see the amount of uncertainty in that lineage's estimate.



Nowcast Estimates in United States for 10/13/2024 – 10/26/2024

USA

WHO label	Lineage #	%Total	95%PI
Omicron	KP.3.1.1	57%	54–60%
	XEC	17%	14–22%
	KP.2.3	5%	4–6%
	MC.1	5%	3–7%
	LB.1	4%	3–5%
	KP.3	3%	3–4%
	LB.1.3.1	2%	1–6%
	KP.2	2%	1–2%
	KP.1.1.3	1%	1–1%
	JN.1.18	1%	0–1%
	LP.1	1%	0–1%
	JN.1.16.1	0%	NA
	KP.1.1	0%	NA
	JN.1	0%	NA
	KS.1	0%	NA
	KP.2.15	0%	NA
	JN.1.11.1	0%	NA
	LF.3.1	0%	NA
	KP.4.1	0%	NA
	JN.1.7	0%	NA

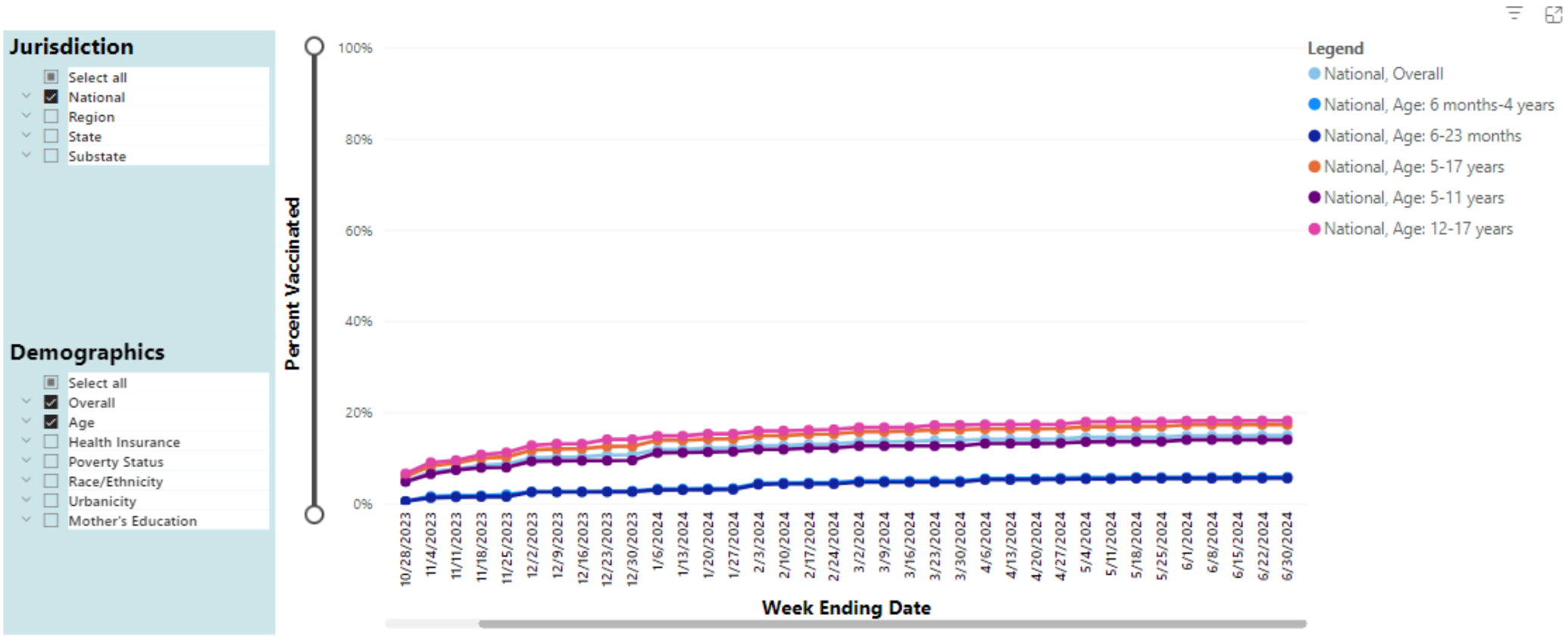
** These data include Nowcast estimates, which are modeled projections that may differ from weighted estimates generated at later dates

Enumerated lineages are US VOC and lineages circulating above 1% nationally in at least one 2-week period. "Other" represents the aggregation of lineages which are circulating <1% nationally during all 2-week periods displayed. While all lineages are tracke by CDC, those named lineages not enumerated in this graphic are aggregated with their parent lineages, based on Pango lineage definitions, described in more detail here: https://web.archive.org/web/20240116214031/https://www.pango.network/the-pango-nomenclature-system/statement-of-nomenclature-rules.

https://covid.cdc.gov/covid-data-tracker/#variant-proportions

Fig. 1A: Child Vaccination Coverage | **Fig. 1B: Child Vaccination Intent** | **Fig. 1C: Child Vaccination Coverage Map** | **Fig. 1D: Child Vaccination Comparison Tables**

Figure 1A. Cumulative Percentage of Children 6 Months-17 Years Who Are Up to Date with the Updated 2023-24 COVID-19 Vaccine†,‡.
Data Source: National Immunization Survey



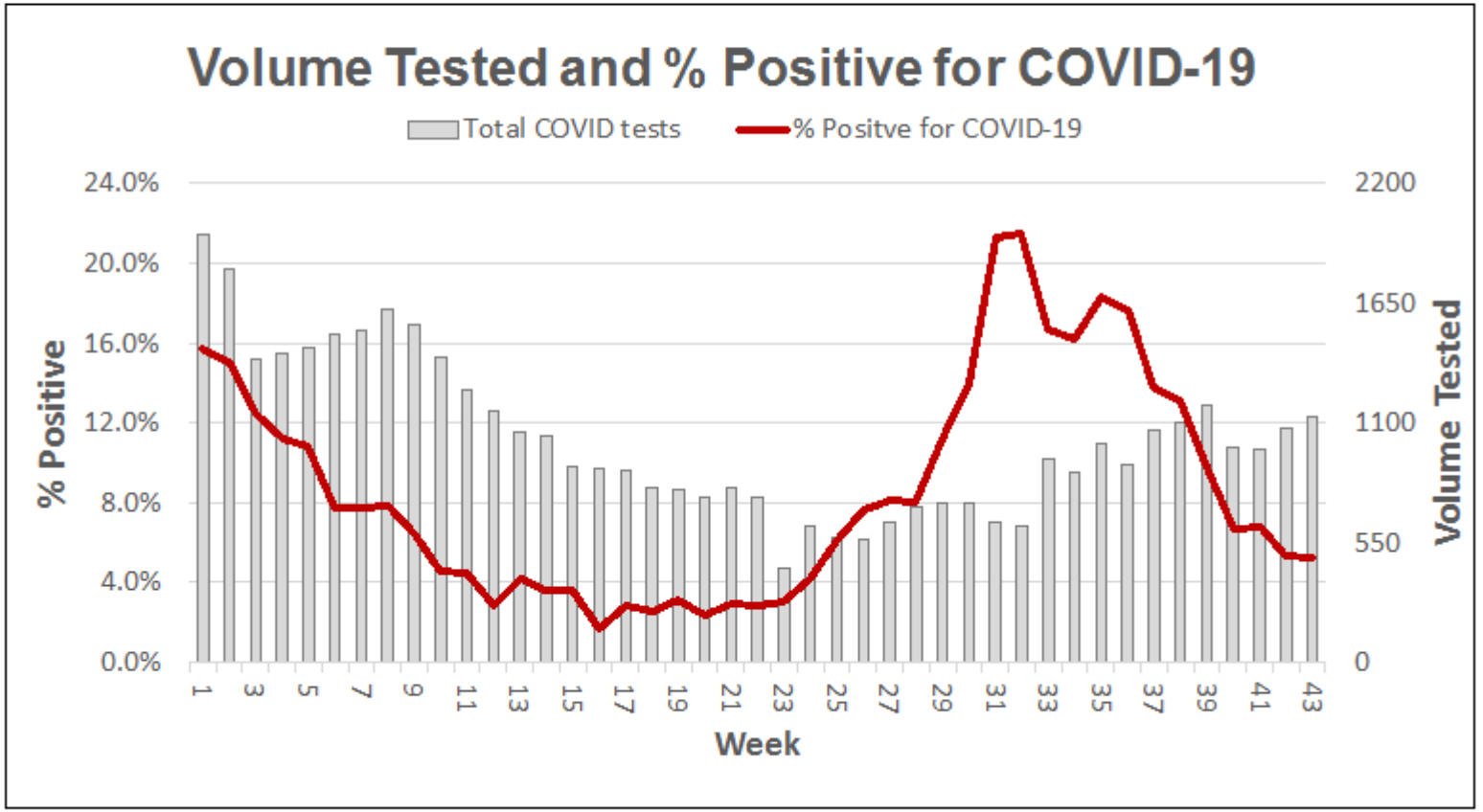
Child Vaccination Coverage and Parental Intent for Vaccination | COVIDVaxView | CDC

WEEKLY RESPIRATORY VIRUS SURVEILLANCE

Week 43– Week Ending October 26, 2024

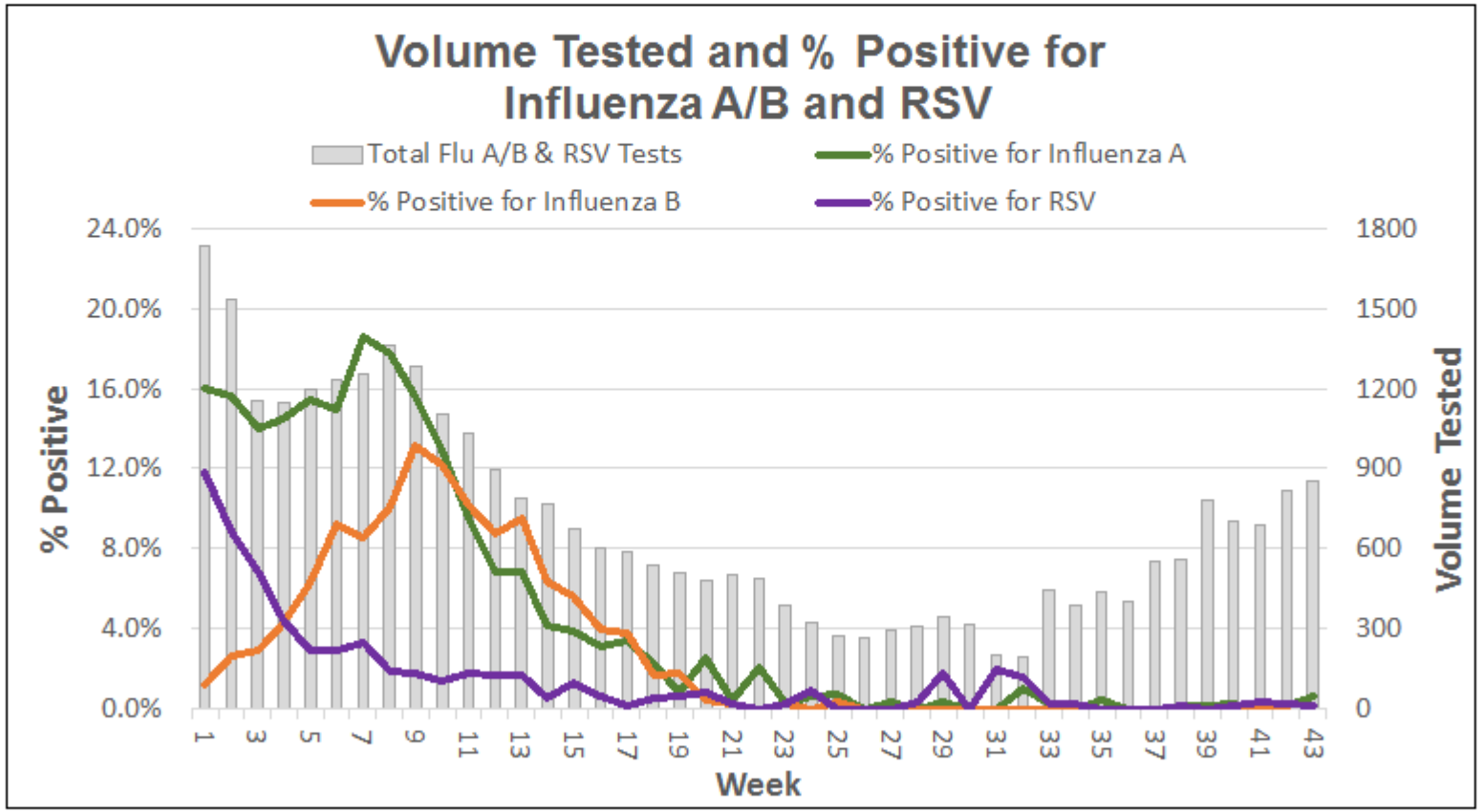
For the week ending October 26, 1132 patient specimens were submitted for COVID-19 testing.

SARS-CoV-2 was detected in 59 of 1132 specimens (5.2%)



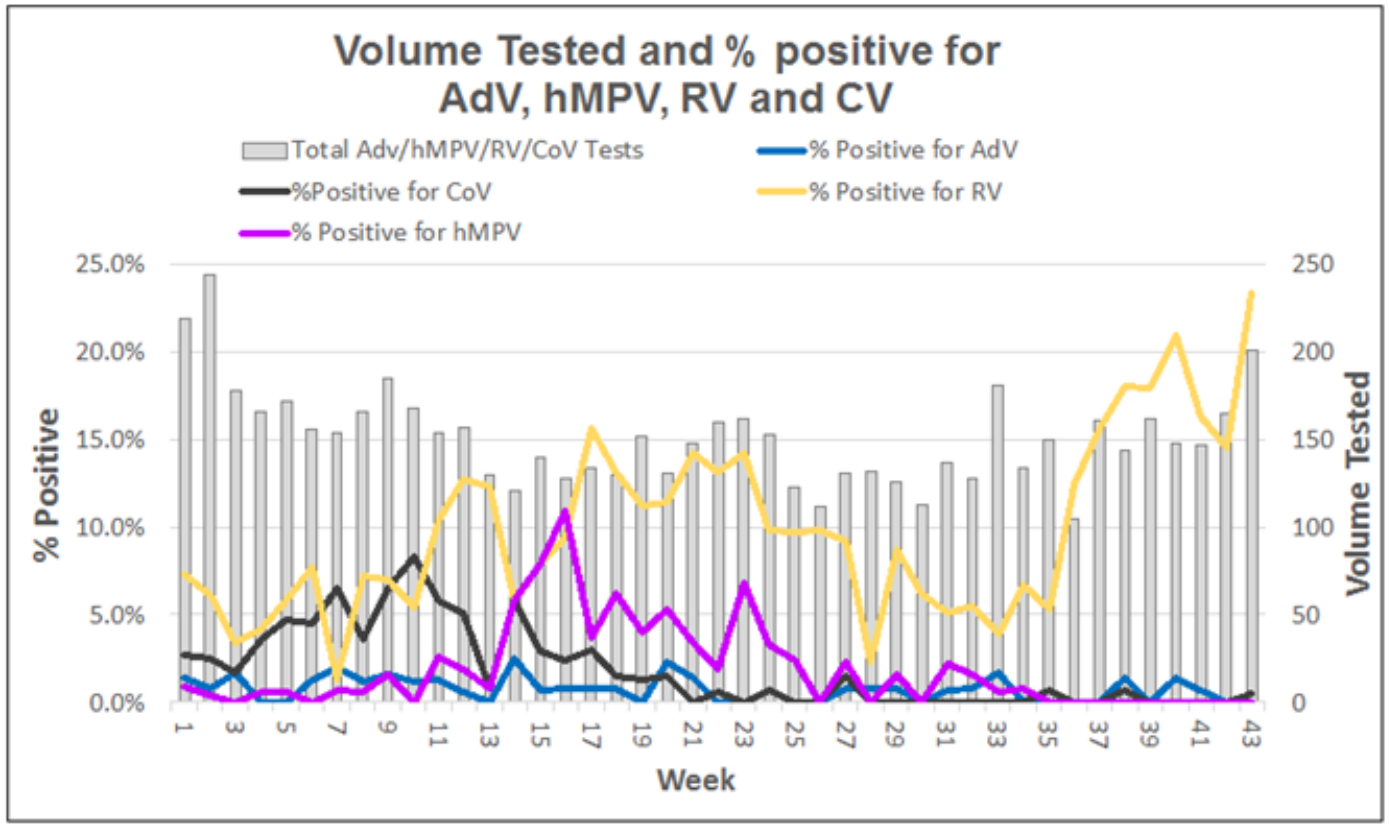
For the week ending October 26, 853 patient specimens were submitted for Influenza A/B and Respiratory Syncytial Virus (RSV) testing.

Influenza A was detected in 5 of 818 specimens (0.6%)
Influenza B was detected in 0 of 818 specimens (0%)
RSV was detected in 1 of 818 specimens (0.1%)



For week ending October 26, 201 patient specimens were submitted for syndromic respiratory panel testing.

Rhinovirus/Enterovirus (RV) was detected in 47 of 201 specimens (23.4%)
Adenovirus (AdV) was detected in 1 of 201 specimens (0.5%)
Metapneumovirus (hMPV) was detected in 0 of 201 specimens (0%)
Non-SARS Coronavirus (CoV) was detected in 1 of 201 specimens (0.5%)



PA DOH – PAHAN 10/17/2024
Increased Mycoplasma pneumoniae infection and Rhinovirus

Summary

- Emergency department visits for pneumonia have been increasing, particularly among children and young adults.
- Some hospitals and college student health centers have reported clusters of cases of pneumonia due to *Mycoplasma pneumoniae*.
- National laboratory surveillance for respiratory viruses is also noting an increase in percent positivity for rhinovirus/enterovirus in PA.
- Testing for respiratory pathogens should be performed to guide appropriate management and treatment. PCR-based molecular tests are preferred for rapid and accurate diagnosis of both *M. pneumoniae* and rhinovirus/enterovirus. Antibiotics should not be used to treat viral infections.
- Macrolides are the first line of treatment for *M. pneumoniae* infections. Macrolide-resistant strains are emerging, but susceptibility testing is not generally available. Consider using tetracyclines or fluoroquinolones if a macrolide does not appear to be effective.
- Use transmission-based precautions (droplet and contact) to reduce spread in health care and community settings. Promote respiratory hygiene and encourage symptomatic individuals to stay-at-home. Encourage vaccination for influenza and other respiratory viruses to reduce the risk of co-infections.
- Report unusual clusters or outbreaks of respiratory illnesses to the Pennsylvania Department of Health by calling 1-877-PA-HEALTH (1-877-724-3258) or your local public health department. Individual cases of *M. pneumoniae* and rhinovirus infection are not reportable to the Department.

At the LGH Laboratory, Mycoplasma pneumonia is tested as part of the Respiratory Pathogen Panel (GENRP).

The Acceptable Specimen for testing is **nasopharyngeal swabs in VTM/UTM.** See test directory for more information.

- Has long incubation period between 1 to 4 weeks
- Outbreaks occurs in crowded setting- schools/ colleges/ nursing home
- Droplet isolation
- Most cases of “ walking pneumonia “
- Rarely severe disease- Severe PNA/ respiratory failure/ encephalitis
- Most common age 5-17 years
- Younger children may have diarrhea/ vomiting/ wheezing

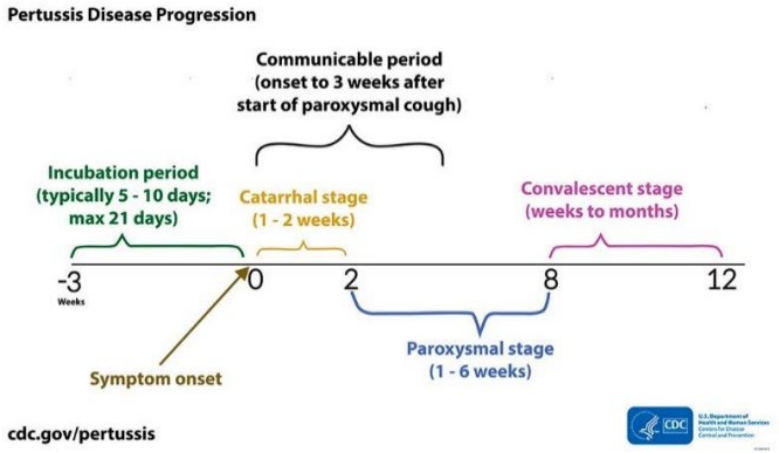
2024-775-10-11-ADV-Mycoplasma.pdf (pa.gov)

https://www.cdc.gov/ncird/whats-new/mycoplasma-pneumoniae-infections-have-been-increasing.html

Increased cases and outbreaks of pertussis PAHAN- PA DOH 9/4/2024

Summary

- In December 2023, the Pennsylvania Department of Health (DOH) released a PA Health Alert, indicating that Pennsylvania had been seeing an increase in cases along with outbreaks of pertussis across the Commonwealth, primarily among high school students and their close contacts. **Cases and outbreaks have continued throughout the summer even though most schools were closed.**
- Historically, pertussis was primarily considered a childhood infection; however, there has been an increasing awareness of cases and hospitalizations occurring in older adults. This is likely due to a multitude of factors including waning vaccine protection and the lack of timely recognition and testing by adult providers leading to more severe infections, co-infections, and hospitalizations in older adults.
- It is important for providers to have an increased suspicion for pertussis in all patients who present with symptoms concerning for pertussis and test for pertussis.
- If there is a high index of suspicion for pertussis and/or if patients have certain high risk conditions or occupations, providers should start antibiotics prior to receiving test results and patients should be told to remain home until completing five days of antibiotics or testing negative for pertussis.
- Primary care providers should promptly prescribe Post Exposure Prophylactic (PEP) antibiotics to high-risk patients and close contacts of cases. This includes all household contacts of cases, regardless of vaccination status.
- The DOH also reminds providers to immediately report suspected cases of pertussis to local public health authorities or to the DOH at 877-PA-HEALTH (877-724-3258).

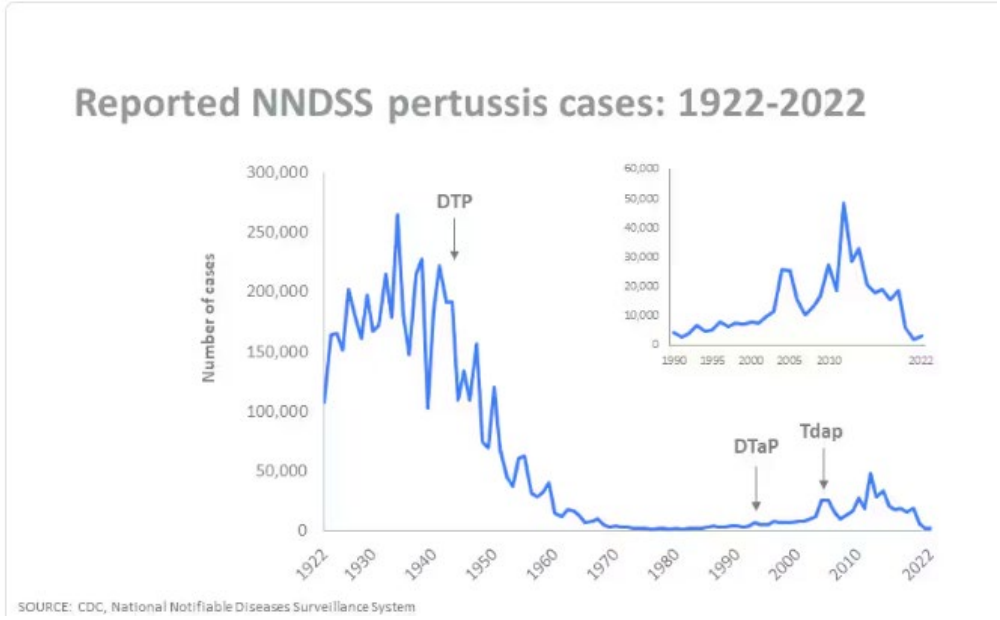


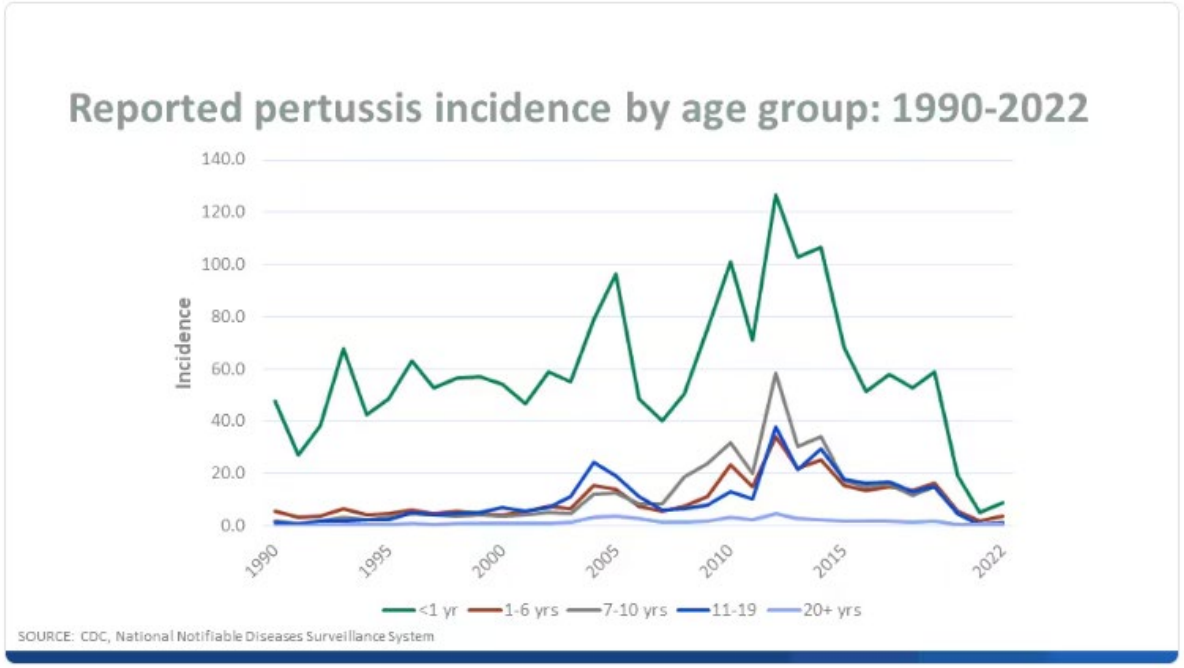
- Nasopharyngeal Swab better than pharyngeal swab
- Multiples Respiratory viral panel is targeted for B. Pertussis but yield might be low if done only nasal
- Start Macrolids and stay home until 5 days of antibiotics
- Treat with PEP of close contacts within 21 days of exposure
- Vaccination

All Provider Pertussis Update (pa.gov)

Pertussis trends

- Pertussis cases lowered during COVID-19 pandemic peaks
- But now cases has increased and reached to pre-pandemic numbers
- CDC tracks pertussis cases using a national surveillance system



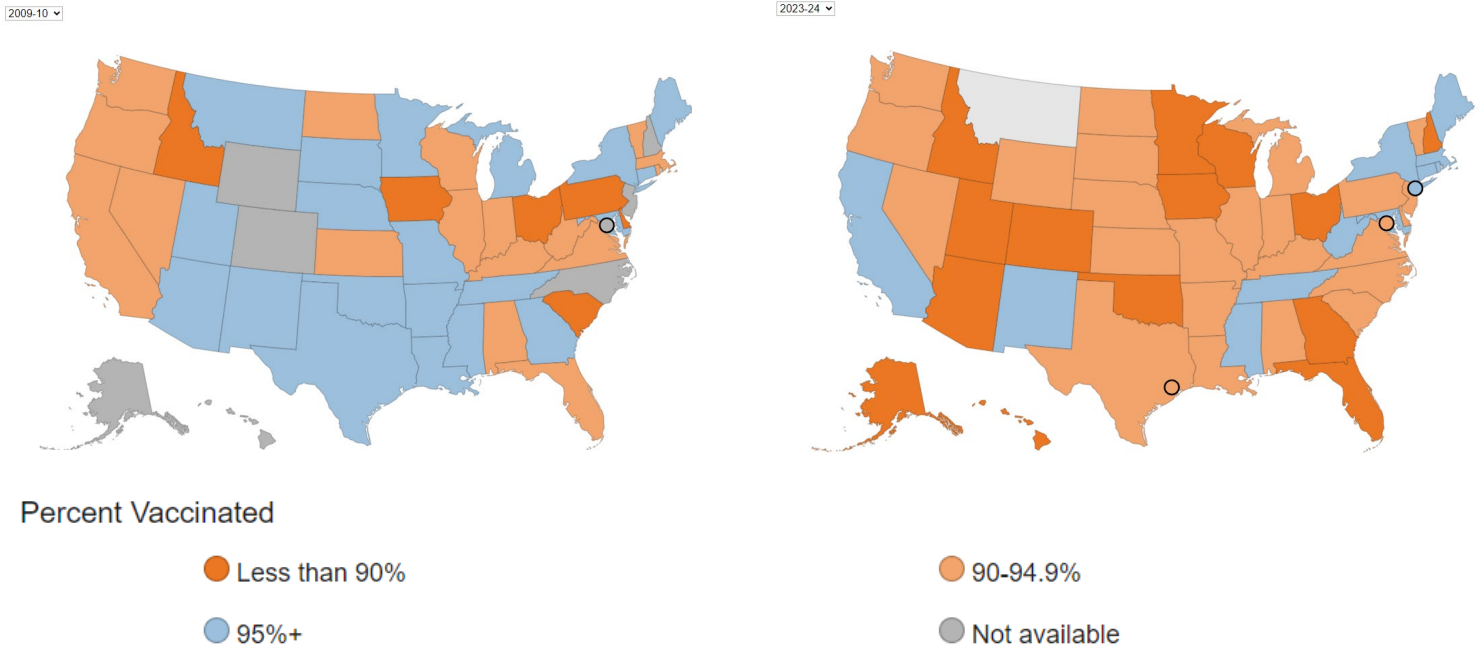


Weekly cases* of notifiable diseases, United States, U.S. Territories, and Non-U.S. Residents week ending October 26, 2024 (Week 43)

Reporting Area	Pertussis			
	Current week	Previous 52 weeks Max †	Cum YTD 2024 †	Cum YTD 2023 †
U.S. Residents, excluding U.S. Territories	462	817	20,791	4,559

Measles outbreaks in 2024

- Measles is highly contagious viral infection associated with high mortality and complications which is vaccine preventable
- So far 14 outbreaks are reported in US in 2024 compared to 4 outbreaks in 2023
- When more than 95 % of people vaccinated – most people are protected with herd immunity
- Highest risk in unvaccinated travelling to countries with high rate of measles
- Airborne Isolation as soon as suspected/ Contact tracing and quarantine



U.S. Cases in 2024

Total cases

269

Age
Under 5 years: **111 (41%)**
5-19 years: **83 (31%)**
20+ years: **75 (28%)**

Vaccination Status
Unvaccinated or Unknown: **88%**
One MMR dose: **7%**
Two MMR doses: **4%**

U.S. Hospitalizations in 2024

40%

40% of cases hospitalized (108 of 269) for isolation or for management of measles complications.

Percent of Age Group Hospitalized
Under 5 years: **51% (57 of 111)**
5-19 years: **25% (21 of 83)**
20+ years: **40% (30 of 75)**

[Measles Cases and Outbreaks | Measles (Rubeola) | CDC]

Invasive Group A strep infection

•Rates of serious group A strep disease have been increasing since 2014- more in 65 and older adults

•Preliminary 2023 data indicate the number of serious infections caused by group A strep reached a 20-year high

•December through April is high season

•Reduced GAS during COVID Pandemic peak

•CDC is increasing surveillance by looking for invasive disease's cases

•No resistant to first-line treatment which is penicillin /amoxicillin

•1/3 invasive group a Streptococcus infection now bacteremia resistant to erythromycin and clindamycin- Second-line treatment.

• Penicillin allergy review is important

•20,000 to 27,000 cases each year

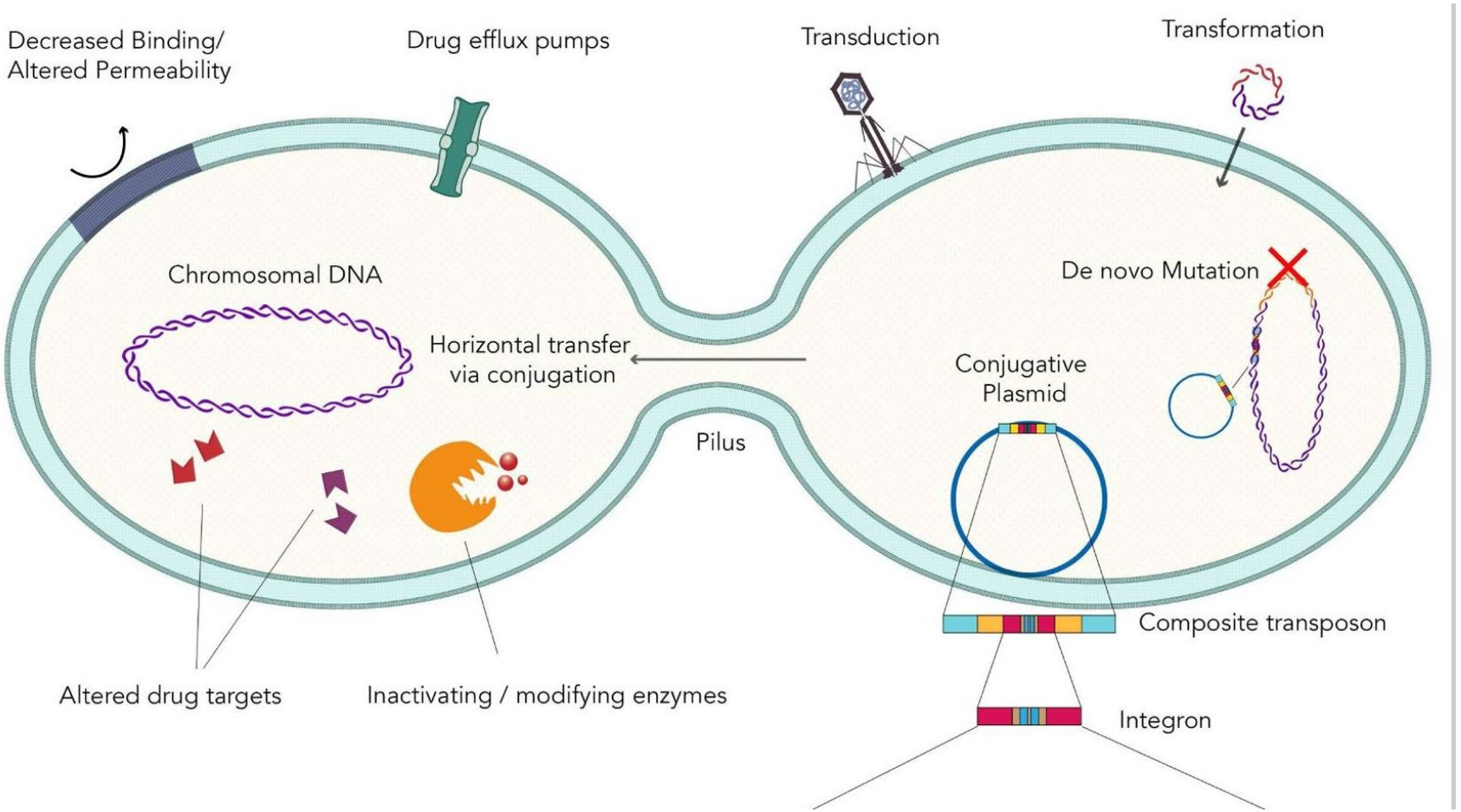
•1,800 and 2,400 deaths each year

Group A Strep Disease Surveillance and Trends | Group A Strep | CDC

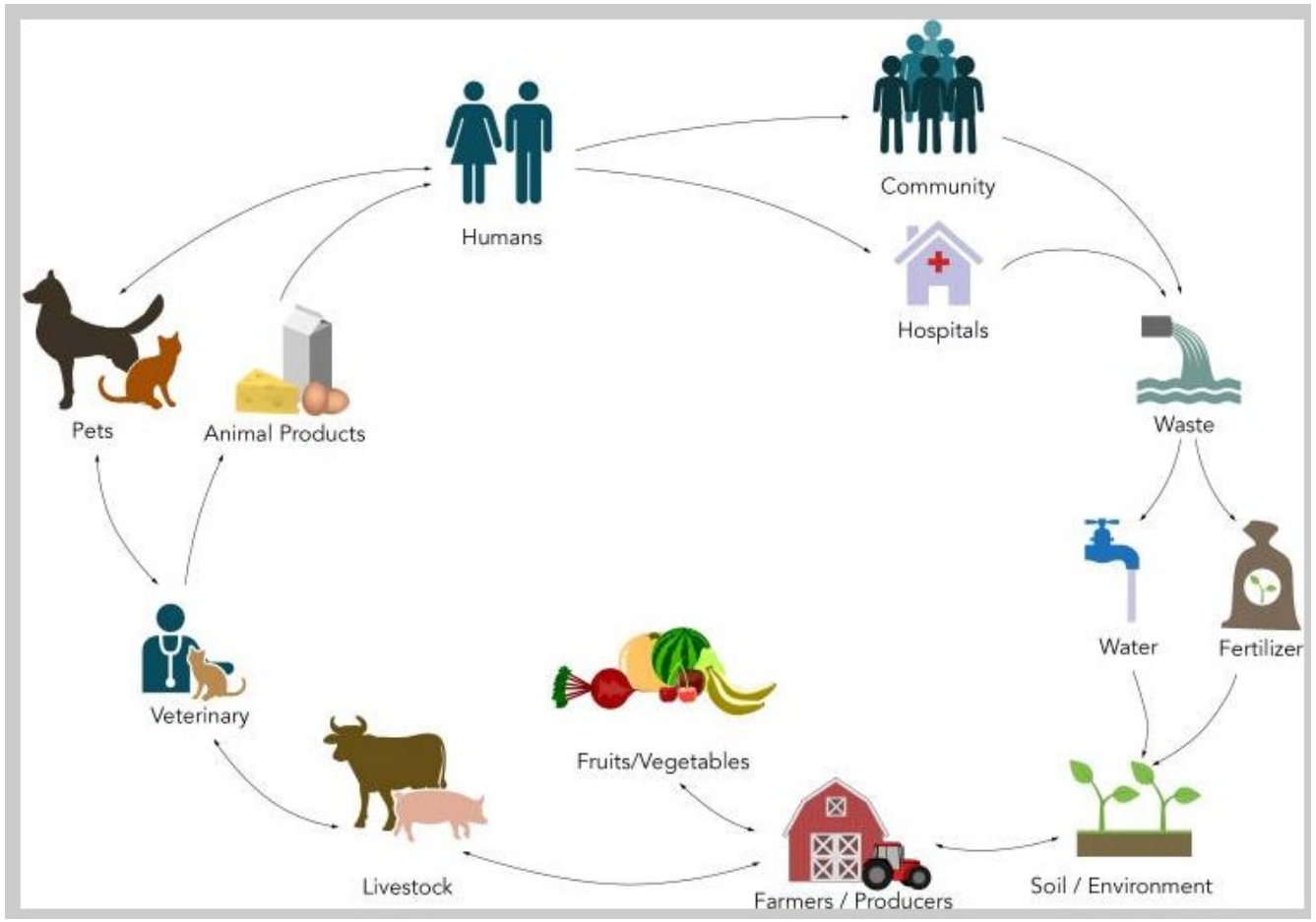
Community-acquired infection with high morbidity which are getting resistant to oral options

- ESBL producing Enterobacteriaceae
- Neisseria gonorrhea
- Salmonella typhi
- Community-acquired MRSA

Antibiotic Resistance in Pediatric Infections: Global Emerging Threats, Predicting the Near Future



https://pmc.ncbi.nlm.nih.gov/articles/PMC5927609/


Humans
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Water
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